

12

EUROPEAN PATENT APPLICATION

21 Application number: **88102983.9**

51 Int. Cl.4: **A43B 5/04**

22 Date of filing: **29.02.88**

30 Priority: **06.03.87 IT 8251687**

43 Date of publication of application:
07.09.88 Bulletin 88/36

64 Designated Contracting States:
AT CH DE FR IT LI

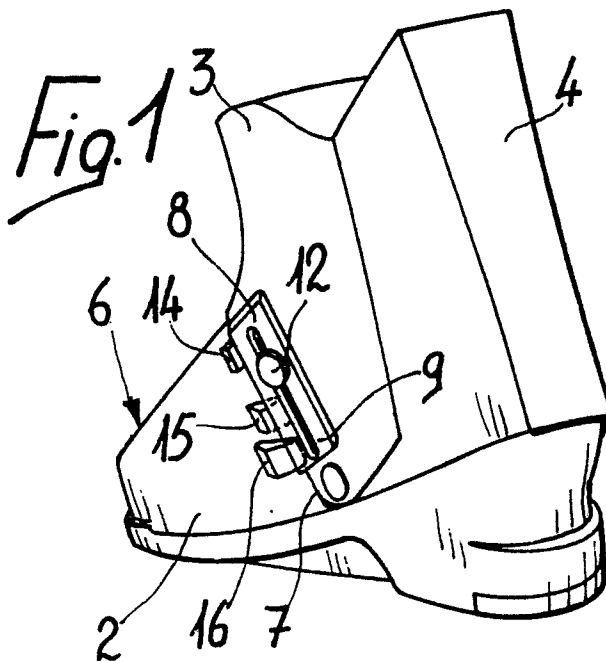
71 Applicant: **NORDICA S.p.A**
Via Piave, 33
I-31044 Montebelluna (Province of
Treviso)(IT)

72 Inventor: **Pozzobon, Alessandro**
Via Ruga 15
I-31050 Paderno di Ponzano (Treviso)(IT)

74 Representative: **Modiano, Guido et al**
MODIANO, JOSIF, PISANTY & STAUB
Modiano & Associati Via Meravigli, 16
I-20123 Milan(IT)

54 **Device for adjusting the flexibility in a ski boot.**

57 The device comprises at least one interference element (5,105,205,305) slideably associated laterally to said at least one front quarter (3,103,203,303). Said interference element selectively interacts with one or more separate contrast elements (14,15,16,115,204,314,315) rigidly associated, with, and protruding from, said shell (2,202). The device furthermore comprises means (12) provided for locking said at least one interference element in a desired position.



DEVICE FOR ADJUSTING THE FLEXIBILITY IN A SKI BOOT

The present invention relates to a device for adjusting the flexibility in a ski boot.

Various devices are currently known applied to boots and used to adjust the flexibility of a quarter with respect to the shell.

In European Patent Application No. 85106353.7 filed on May 23, 1985 by the same applicant, and assumed included herein as reference, a device is claimed the peculiarity whereof resides in the fact that an interference element is provided, constituted by a wedge-like body which acts between the shell and the front tip, at the region of the instep of the foot.

Means for the adjustment of its position with respect to the longitudinal axis of the shell are associated with said wedge-like body.

Said means allow to adjust the contrast and the movement of said front quarter with respect to the shell.

Though said device allows a good flexibility, it is structurally very complicated with regard to its application to the boot.

The adjustment of the device furthermore requires successive settings before achieving the desired degree of flexibility, there being no separate positions univocally determining said degree; this condition forces the skier to execute multiple forward flexings, making this adjustment uncomfortable in use.

Published French Patent Applications No. 2480575 and No. 2564710 disclose ski boots having devices for adjusting the quarter flexibility. Although these devices allow a rather satisfactory adjusting of the flexibility they have quite a complex and costly structure; the adjusting operation being furthermore sometimes difficult and long.

Also U.S. patent No. 4,095,356 discloses a ski boot having a flex adjusting possibility of the quarters obtained by means of a complex structure. All these ski boots have the disadvantages of having a complicated structure which entails high manufacturing costs.

The aim of the present invention is therefore to eliminate the disadvantages described above in known types, by providing a device which allows a rapid, simple and easy adjustment of the flexibility of the front quarter with respect to the shell.

Within the scope of the above described aim, an important object is to provide a device which has the preceding characteristic without affecting the region of the instep of the foot of the skier.

Another object is to provide a device wherein the skier can adjust the flexibility at any moment.

Still another object is to provide a device which allows a wide degree of adjustment of the flexibil-

ity.

Not least object is to provide a device which is structurally simple and has good reliability in use.

The aim and the objects described above, as well as others which will become apparent hereinafter, are achieved by a device for adjusting the flexibility in a ski boot, comprising a shell whereto is associated at least one front quarter, characterized in that it comprises at least one interference element slideably associated laterally to said at least one front quarter and selectively interacting with one or more separate contrast elements rigidly associated and protruding from said shell, means being provided for locking said at least one interference element in a desired position.

Further characteristics and advantages of the invention will become apparent from the detailed description of some embodiments, illustrated only by way of non-limitative examples in the accompanying drawings, wherein:

figure 1 is a perspective view of a boot according to the invention;

figure 2 is a partially sectioned side view of the boot, wherein for sake of clarity the interference element element is pointed out;

figure 3 is a view along the sectional plane III-III of figure 2;

figure 4 is a perspective view of a boot according to another aspect of the invention;

figure 5 is a side view of a detail of a boot according to a third aspect of the invention; and

figure 6 is a view according to a sectional plane transverse to the shell passing at the contrast elements protruding from the shell of a boot according to a fourth aspect of the invention.

With reference to the above described figures, the device for adjusting the flexibility in a ski boot 1, comprising a shell 2 whereto are articulated a front quarter 3 and a rear quarter 4, comprises an interference element 5 preferably wedge-shaped with its vertex directed towards the tip 6 of the boot 1.

Said interference element 5 is interposed between the shell 2 and the front quarter 3, on the latter there being provided, at the lateral region and proximate to the perimetral edge 7 of said front quarter 3, a guide 8 with which said element 5 is slideably associated.

Said guide 8 is arranged approximately parallel to the perimetral edge 7 and has a longitudinal slot 9, for a means for locking said interference element 5 to said guide.

Said locking means comprises a locking screw having a threaded stem 10 passing through at said slot 9 and associated with a complementarily

threaded seat 11 provided on the interference element 5, with said stem 10 there being rigidly associated a head 12 protruding from said slot 9 and having a lateral surface 13 knurled to provide a better grip for the user.

The greater or smaller rotation imparted to the head 12 allows to lock the interference element 5 at a selected point of the guide 8 or allows its free sliding with respect thereto and to the underlying shell 2.

Said interference element 5 interacts with three separate contrast elements constituted by a first, a second and a third lug, respectively indicated by the numerals 14, 15 and 16, rigidly associated and protruding from the shell 2 proximate to the perimetral edge 7 of the front quarter 3.

The first lug 14 is positioned proximate to the region 17 of the instep of the foot, and has an abutment 18 for the end directed towards the tip 6 of the interference element 5, positionable thereat by moving the head 12 at the upper end of the slot 9.

Beyond the first lug 14, in the direction of the sole 19 of the boot 1, a second lug 15 is provided at a distance from the first lug 14 at least equal to the width of the interference element 5.

Also the second lug 15 has a wedge-like shape with the vertex directed towards the element 5.

Adjacent to the second lug 15 a third lug 16 is provided, having the same shape as the previous one, the two possibly having differentiated longitudinal extensions and/or an inclined surface interacting with the interference element 5 having different degrees of inclination.

This allows to obtain a different degree of flexibility for the quarter.

By acting on the head 12 the skier can determine with which lug 14, 15 or 16 the interference element 5 can interact.

This operation is very easy, since the skier has to bend laterally and not forwards.

The interspace between the first lug 14 and the second lug 15 furthermore provided a condition of maximum flexibility.

It has thus been observed that the invention achieves the intended aim and objects, a device having been provided which besides allowing a rapid, simple and easy adjustment of the flexibility of the front quarter with respect to the shell allows to achieve a wide degree of adjustment of the flexibility, the device being furthermore structurally very simple and reliable in use.

Naturally the invention is susceptible to numerous modifications and variations, all within the scope of the same inventive concept.

Thus, for example, as illustrated in figure 4, the second and the third lug may be constituted by a single lug 115, the variation of the degree of flexi-

bility being achieved by using a slot 109 on the front quarter 103 which has a first portion approximately parallel to the perimetral edge 107 of the latter and, approximately at the midpoint of said lug 115, a portion 120 inclined in the direction of the heel 121 of the boot 101.

In this manner the interference element 105 is spaced, in a suitable and variable manner, from the surfaces with which it interacts with the lug 115.

As illustrated in figure 5, the first lug 204, if a locked effect, that is to say the lack of flexibility, is desired, may have, at the end of the interference element 205 directed towards the tip of the boot, an abutment shaped complementarily thereto.

In this manner the front quarter 203 is prevented from having any relative movement with respect to the shell 202.

Figure 6 partially illustrates a ski boot according to a further aspect of the invention, in which the guide 308 is arranged at a plane inclined with respect to that of arrangement of the underlying surface of the shell 302.

Supposing that said inclination causes the guide 308 to space itself further from the shell 302 at the lug 315, consequently upon a movement of the interference element 305 from the first lug 314 to the lug 315 a progressive increase of the distance between the surfaces of interaction between said lugs and said interference element is imposed.

This allows therefore to vary the degree of flexibility of the front quarter 303 with respect to the shell 302.

Naturally the means for locking said interference element may be the most suitable according to the specific requirements, for example it can be constituted by a threaded stem at its end protruding out of the guide there being associated a small knob provided with an eccentric element and interacting with an adapted toothing provided on the front quarter.

The number of contrast elements, as well as their arrangement and the degree of inclination of the surface interacting with the interference element may also be the most suitable according to the specific requirements.

The materials and the dimensions of the individual components of the device may also be any according to the specific requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Device for adjusting the flexibility in a ski boot, comprising a shell (2,202) whereto is associated at least one front quarter (3,103,203,303), characterized in that it comprises at least one interference element (5,105,205,305) slideably associated laterally to said at least one front quarter (3,103,203,303) and selectively interacting with one or more separate contrast elements (14,15,16,115,204,314,315) rigidly associated and protruding from said shell (2,202), means (12) being provided for locking said at least one interference element in a desired position.

2. Device according to claim 1, characterized in that said interference element (5) is interposed between said shell (2) and said front quarter (3), on said front quarter a guide (8) being provided, at at least one lateral region and proximate to the perimetral edge (7), said interference element (5) being slideably associated with said guide.

3. Device according to claims 1 and 2, characterized in that said interference element (5) has a wedge-like shape with its vertex directed towards the tip (6) of said boot.

4. Device according to claims 1 and 2, characterized in that said guide (8) is arranged approximately parallel to said perimetral edge (7) of said front quarter, said guide (8) having a longitudinal slot (9), said slot (9) being a seat for a means (12) for locking said interference element to said guide.

5. Device according to claims 1 and 4, characterized in that said locking means comprises a locking screw having a threaded stem (10), passing within said slot (9), and associated with a complementarily threaded seat (11) provided on said interference element (5), with said stem (10) there being rigidly associated a head (12), protruding externally to said slot (9), for the grip of the skier.

6. Device according to claims 1 and 5, characterized in that from said shell (2) there protrude, approximately at the perimetral edge (7) of said front quarter (3) having said guide (8), three separate contrast elements constituted by a first (14), a second (15) and a third (16) lug.

7. Device according to claims 1 and 6, characterized in that said first lug (14) is adjacent to the region of the foot instep and has an abutment for the end, directed towards the tip (6) of the boot, of said interference element (5).

8. Device according to claims 1, 6 and 7, characterized in that said second lug (15) is spaced from said first lug (14) in the direction of the sole (19) of said boot (1), by a distance at least equal to the width of said interference element (5), said second lug (15) having a wedge-like shape with the vertex directed towards said interference element (5).

9. Device according to claims 1, 6, 7 and 8, characterized in that said third lug (16) has a shape similar to that of said second lug (15), said lugs (15,16) having different longitudinal extensions and different placements adjacent to said perimetral edge (7) of said front quarter (3) and an inclined surface, interacting with said interference element (5), having a different degree of inclination.

10. Device according to the preceding claims, characterized in that said second and third lug comprise a single contrast element (115), said slot (109) having, at said contrast element (105), a first portion approximately parallel to the perimetral edge (107) of said front quarter (103) and a second portion (120) inclined approximately in the direction of the heel (121) of said boot (101).

11. Device according to the preceding claims, characterized in that said first lug (204) has an abutment shaped complementarily to the end of said interference element (205) directed towards said tip of said boot.

12. Device according to the preceding claims, characterized in that it comprises a guide (308) arranged at a plane inclined with respect to a plane of arrangement of the underlying surface of said shell (302), the same (308) being more spaced from said shell (302) at said lug (315) adjacent to said sole of said boot.

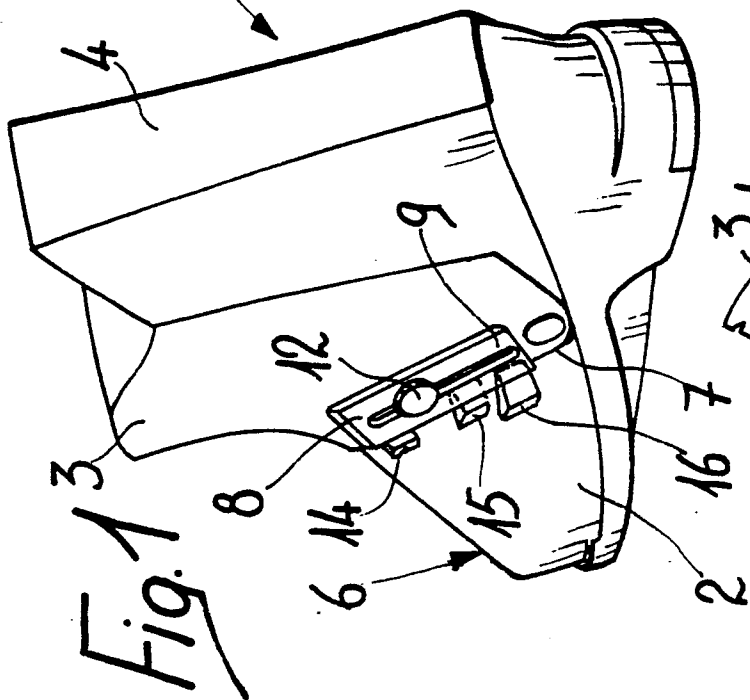


Fig. 1

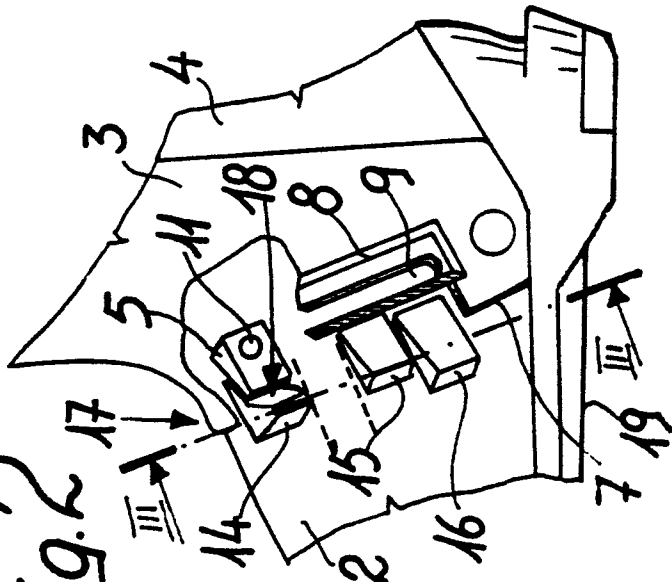


Fig. 2

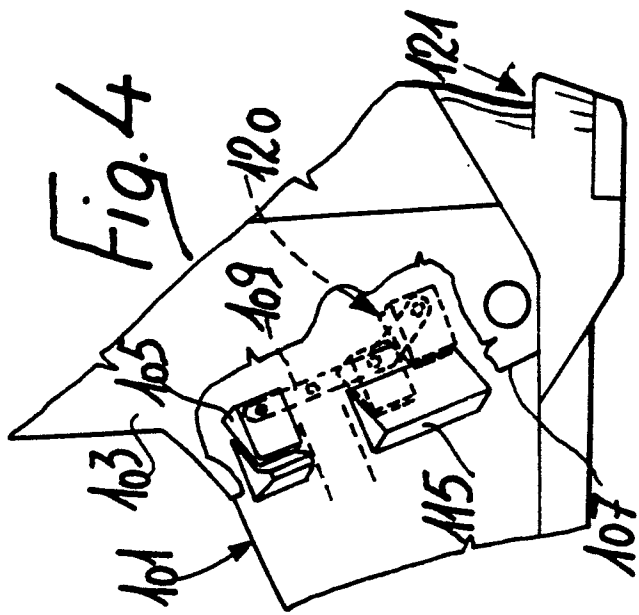


Fig. 4

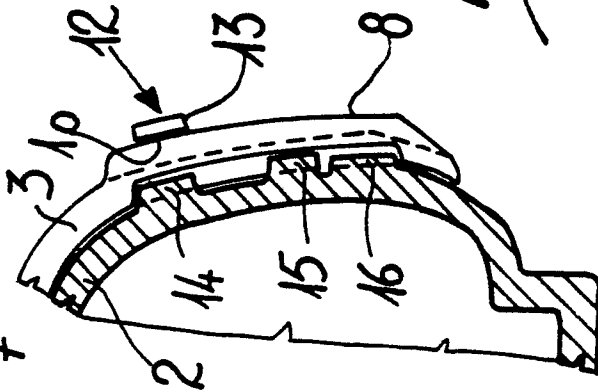


Fig. 3

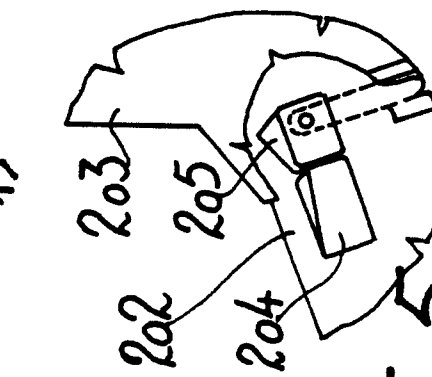


Fig. 5

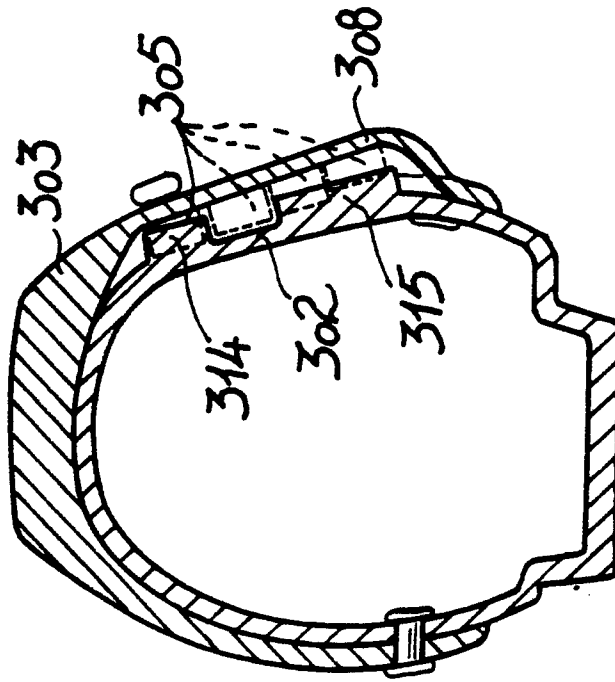


Fig. 6